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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/890,550	01/14/2002	Kazutaka Majima	2000-22	4691

7590 08/18/2003

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EXAMINER
VO, HAI

ART UNIT	PAPER NUMBER
1771	

DATE MAILED: 08/18/2003

14

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/890,550	MAJIMA ET AL.	
	Examiner	Art Unit	
	Hai Vo	1771	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 May 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *28 and 41-49* is/are pending in the application.

4a) Of the above claim(s) *28,41 and 42* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *43-49* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 43-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ashmead et al (US 5,534,328) in view of Tsukada (US 4,846,673) as evidenced by Kassir et al (US 5,964,646). Ashmead teaches an integral structure provided for chemical processing and manufacture comprising a plurality of laminae joined together and having inlet and outlet ports connected by a three dimensionally tortuous channels (figure 4, abstract). Ashmead teaches the laminae made of a ceramic material such as silicon carbide (column 3, lines 10-12). Ashmead further discloses a wear resistant coating of silicon being deposited on the processed laminae before bonding (column 6, lines 60-65). Ashmead does not specifically disclose the laminae formed from a porous body of silicon containing ceramic material that has the pores being impregnated with a metallic silicon. Tsukada teaches a heat-resistant composite body comprising a porous body of silicon containing ceramic material that has the pores being impregnated with a metallic silicon (abstract). Tsukada teaches the porous body including silicon carbide crystals with an average grain diameter of 80 microns, having a porosity of 25% and a thermal conductivity within the claimed range (column 9, lines 5-35). Tsukada teaches the porous body comprising the metallic silicon with an amount of 24 parts

by weight based on 100 parts by weight of silicon carbide (column 9, lines 34-35) within the claimed range. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the porous body as taught in Tsukada as the laminae of the integral structure motivated by the desire to provide the integral structure with superior thermal conductivity, which is important to the invention of Ashmead, thus further suggesting the modification.

Ashmead as modified by Tsukada fails to teach the integral structure having been used as a grinding surface of the wafer grinder table. However, most available wafer grinder tables have a grinding surface that is made of porous ceramic material as evidenced by US 5,964,646, Kassier et al (figure 2), therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the integral structure as a wafer grinder table because such is the intended use of the materials. Tsukada discloses the silicon carbide crystals including fine silicon carbide crystals which have an average grain diameter of 1.1 microns and rough silicon carbide crystals which have an average grain diameter of 80 microns (column 7, line 50; column 9, line 6), meeting the specific ranges required by the claims. Tsukada does not specifically disclose the amounts of the fine and rough silicon carbide crystals in % by volume. However, since the porous body of Tsukada meets all the structural and chemistry limitations required by the claims, the porosity, thermal conductivity, grain size, metallic silicon content within the claimed ranges. It is not seen that the amounts of the fine and rough silicon carbide crystals would have been present outside the range claimed by the present invention.

With regard to claim 46, Ashmead fail to disclose or suggest the thickness of the silicon surface layer of the laminae. Thus, the skilled artisian must rely on his own knowledge. It would be obvious to one of ordinary skill in the art to employ as little of the bonding layer as possible in order to reduce cost. Thus, in the absence of unexpected results, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the silicon bonding layer with the thickness instantly claimed since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involved only routine skill in the art. ***In re Aller***, 105 USPQ 233.

Response to Arguments

3. Applicant's arguments with respect to claims 43-46 have been considered but are moot in view of the new ground(s) of rejection.
4. The art rejections in Paper no. 11 have been overcome by the present response (pages 6 and 7 of Paper no. 13).

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai Vo whose telephone number is (703) 605-4426. The examiner can normally be reached on Tue-Fri, 8:30-6:00 and on alternating Mondays.

   If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (703) 308-2414. The fax phone numbers for the organization where this application or proceeding is assigned are

(703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

HV
August 6, 2003

TERREL MORRIS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700